

# Towards Zero Fashion Waste Market Study Sector Report

**July 2022**

**Textile & Fashion Federation (Singapore)**

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# The Fashion & textile sector has an outsized environmental impact, with GHG emissions making up c.7% of total global emissions

## Global fashion industry environmental impacts

The fashion industry has an outsized impact on the environment...



- 1.5 trillion litres of water are used by the fashion industry annually
- 200 tons of fresh water is needed to dye one ton of fabric



- 23 kg of greenhouse gases are generated for each kilo of fabric
- 70 million oil barrels are used each year to produce polyester



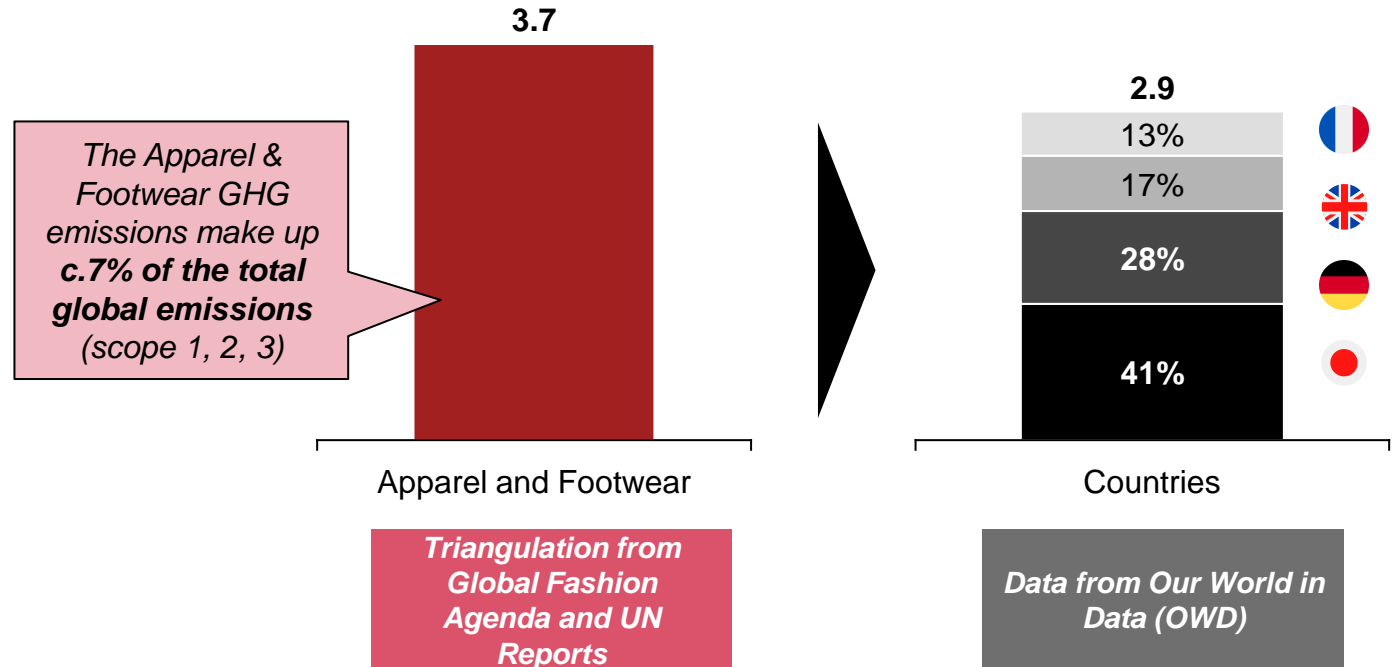
- 1 kg of chemicals<sup>1</sup> are used to produce 1 kg of textiles
- 23% of all chemicals<sup>1</sup> used worldwide are for the textile industry
- 190,000 tons of microplastics end up in the ocean each year



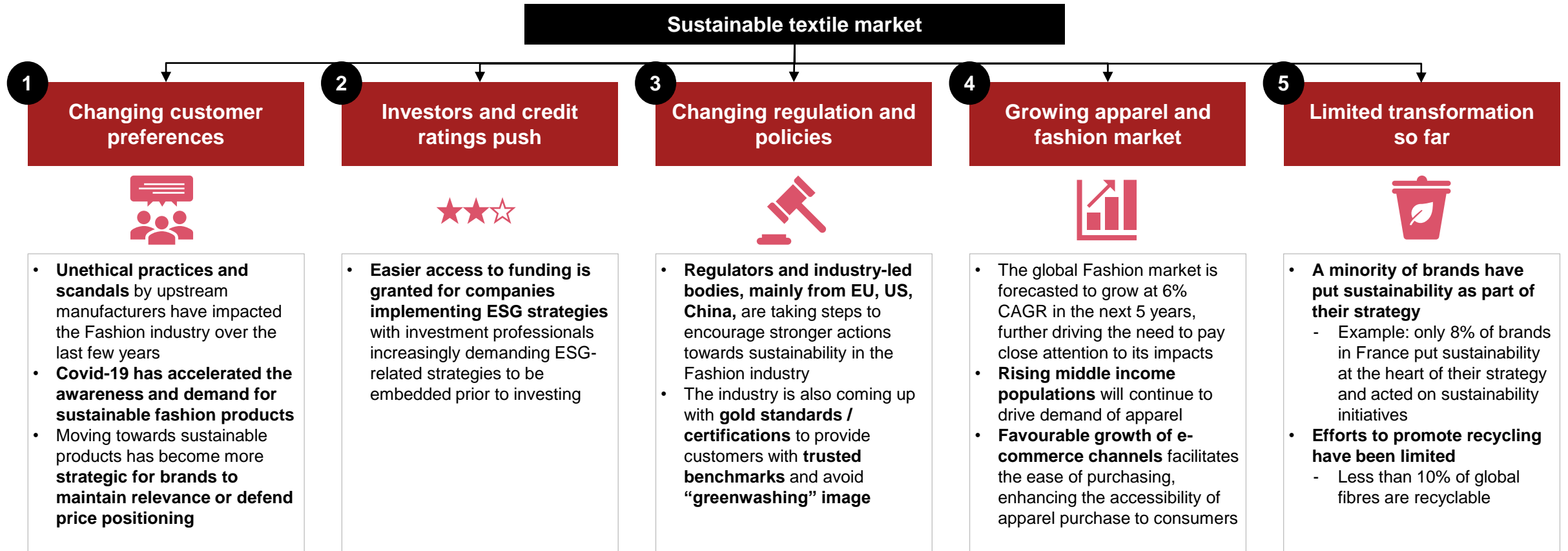
... with an GHG emission impact larger than that of 4 major nations...

Comparison of Global Apparel & Footwear GHG emissions and total country emissions % - France, United Kingdom, Germany and Japan (2018)

In bn tonnes CO<sub>2</sub>eq



# Status quo is not an option. Several drivers are signalling the urgency for the industry to transform itself



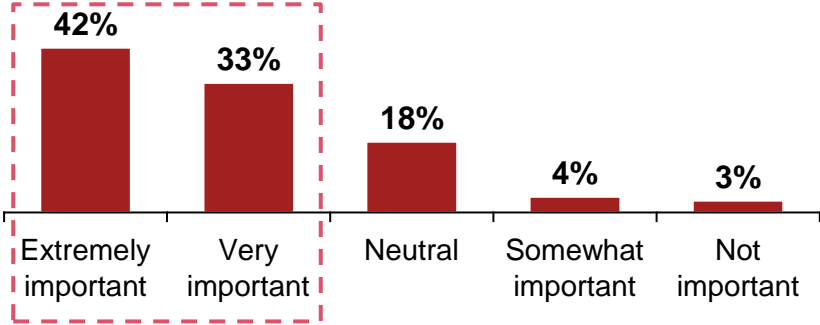
**These key drivers are urging the Fashion industry to act and decarbonise its value chain, both from a defensive and offensive perspective**



# Moving towards more sustainability is strategic for brands to stay relevant and in-tune with changing consumer preferences

## Sustainability's importance as a KPC for consumers is growing in significance...

Sustainability importance when purchasing fashion products, In % of respondents<sup>1</sup>



• Strongest triggers for change are **awareness of climate change efforts** (c.50%<sup>1</sup>) and **natural disaster events** (c.49%<sup>1</sup>)

• Awareness is further driven by **increased social media content** and **availability of online resources** regarding sustainability

## ... prompting brand owners to expand sustainability initiatives so as to maintain brand relevance and capitalise on strategic benefits

Key drivers for brand owners to focus on sustainability (non-exhaustive)

- To develop a socially responsible image**
  - Brands are trying to **avoid scandals** that **depreciate brand value** in the public's eyes and **distance themselves from poor ethical practices**
  - This is further accelerated by **growing consumer awareness of clothing practices**, exacerbated by **the media and influencers**
- To defend price positioning**
  - Brands perceived as **"socially responsible"** or **"purpose-driven"** are often able to **strengthen and/or defend its price positioning**
  - Brands that communicate the use of **higher quality / more sustainable raw materials** are often able to **command a premium** on its products (e.g. willing customers typically accept a **~25% premium** on average<sup>2</sup>)
- To expand into new growth segments**
  - As consumer awareness and priority on sustainability **continues to grow**, demand for **sustainable fashion products** is **expected to increase**
  - Large global brands are **capitalising** on this opportunity to expand its growth into new sustainable segments (e.g. H&M COS Resell in UK)

« *"We are trying to raise awareness of circular business models and **drive them into the core of the Group's business**. Our main focus to succeed with these new business models is to meet **changing customer behaviours**."* »

- Strategy Lead for Circular Business Development, H&M



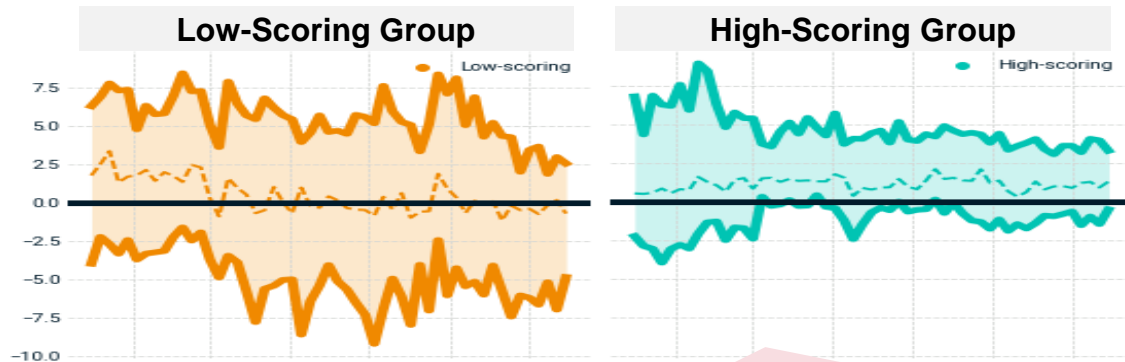
# Access to funding is increasingly granted to companies implementing ESG strategies by investment professionals

**Investment professionals are increasingly demanding ESG-related strategies to be embedded prior to investing<sup>1</sup>**

*MSCI indicates that corporate green bonds tend to offer **yields 0.02% lower (indicating lower interest rates)** than comparable non-green corporate bonds*

**Comparison of Green Bond Yield Spreads<sup>2</sup> between low and high environmental-scoring<sup>3</sup> groups of companies**

In basis points



- The narrower gap (narrower yield spreads) indicates **lower interest rates and cheaper cost of borrowing**
- Appears **primarily driven by high bond prices from high investor demand**

**... while financial stakeholders are closely monitoring companies' ESG practices<sup>2</sup>**

**91%**

**91% of banks monitor ESG**, along with 24 global credit rating agencies, while 71% of fixed income investor and over 90% of insurers doing the same

**67%**

**67% of banks screen their loan portfolio for ESG risks**

**34%**

**34% of ESG-related actions by S&P Global Ratings between April and August 2020 were downgrades**

**33%**

**33% of private sector rating actions published by Moody's in 2019 cite ESG risks as material credit considerations**



# Countries across SEA are beginning to form national ambitions around sustainability. Textile-specific regulations are for now limited...

## Overview of regional sustainability initiatives

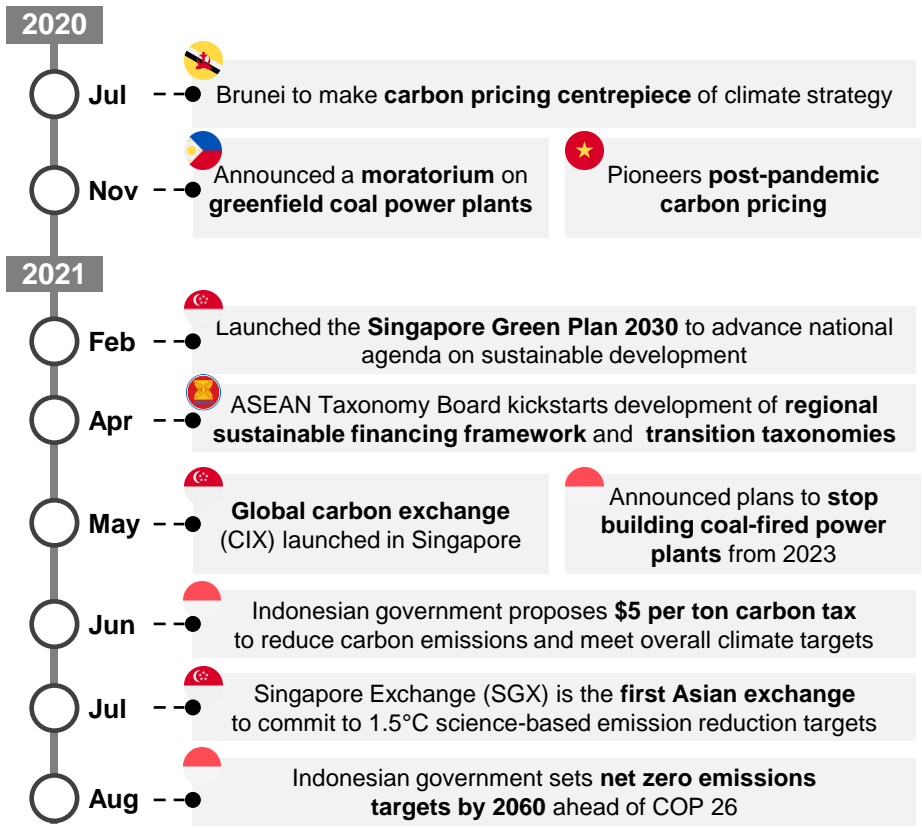
### Sustainability-linked initiatives and targets across ASEAN

	Net Zero	Carbon tax	Renewable targets <sup>1</sup>	Nature
Brunei		Implemented by 2025	~30% by 2035	Increase forest reserves to 55% by 2030
Cambodia			~25% by 2030	Increase forest cover to 60% by 2030
Indonesia	2060	Carbon tax implemented, ETS <sup>2</sup> under consideration	~48% by 2030	
Laos	2050		~30% by 2025	Increase forest cover to 70% by 2030
Malaysia			~40% by 2035	
Myanmar			~11% by 2030 (non-hydro) <sup>3</sup>	
Philippines			~38% by 2035	
Singapore	2050	Carbon tax implemented in 2019	~15% by 2030 <sup>4</sup>	
Thailand			~30% by 2030	Increase forest cover to 55% by 2037
Vietnam		ETS <sup>2</sup> to take effect in 2022	~32% by 2030	Increase forest cover to 42% by 2030

Note: 1) Refers to installed capacity targets, not power supply/generation; 2) Emissions trading schemes; 3) Unconditional target for non-hydropower renewables; 4) Based on 2GWp solar capacity target by 2030 as % of estimated total power capacity of ~13.8GW  
 Source: Bloomberg, Jakarta Post, Straits Times, Reuters, The Edge, Bangkok Post, IEA, UNFCCC, ASEAN Energy, Global Data, CAN, Business Inquirer, Press search

Regulations / committed targets in place Non-exhaustive

### Recent sustainability landmark announcements



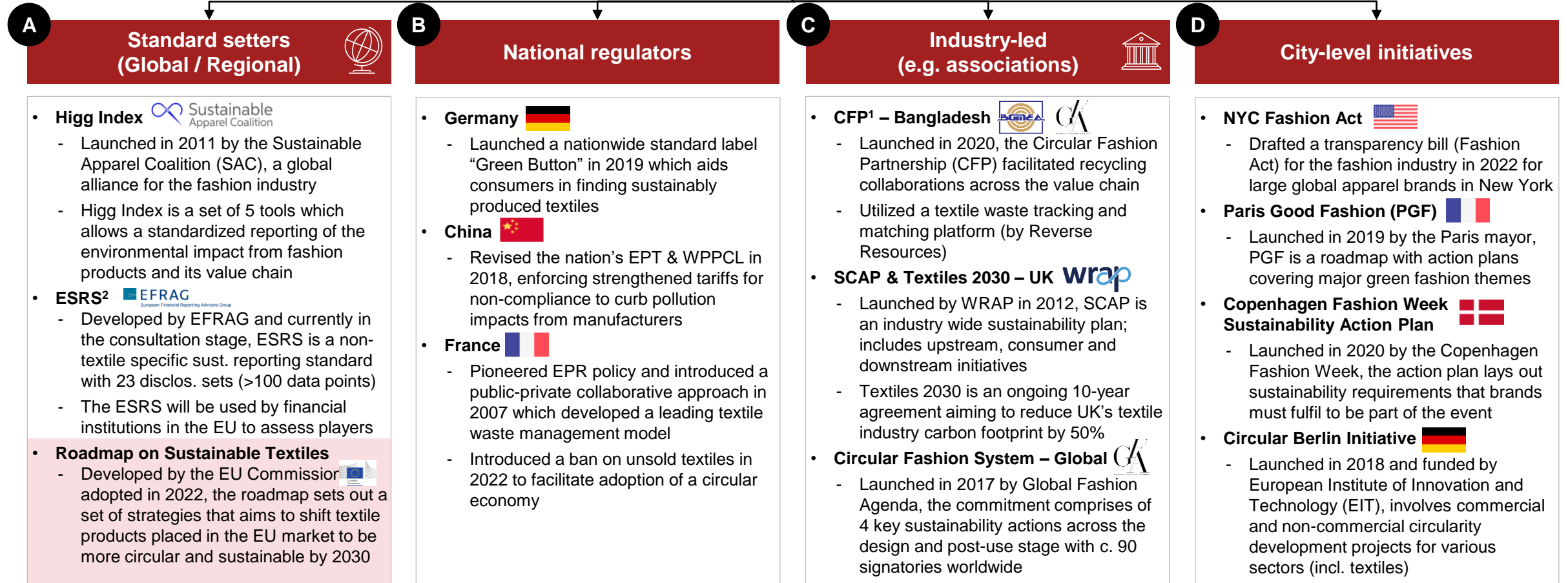


# ... but evolving global regulations and industry-led initiatives will gradually push the industry towards more sustainable practices

## Overseas initiatives – Key regulations and policies

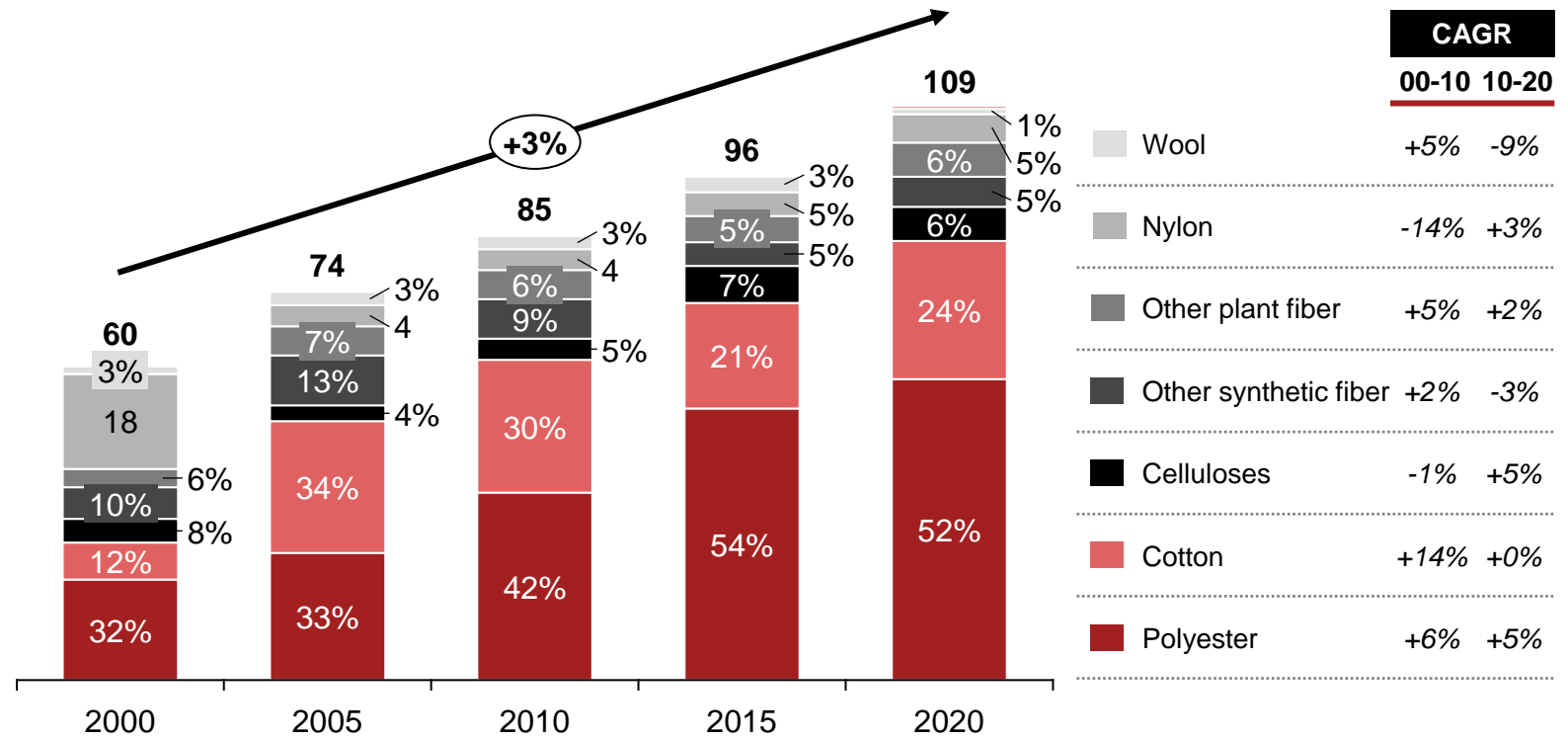
*Non-exhaustive*

### International comparison – Regulatory lens

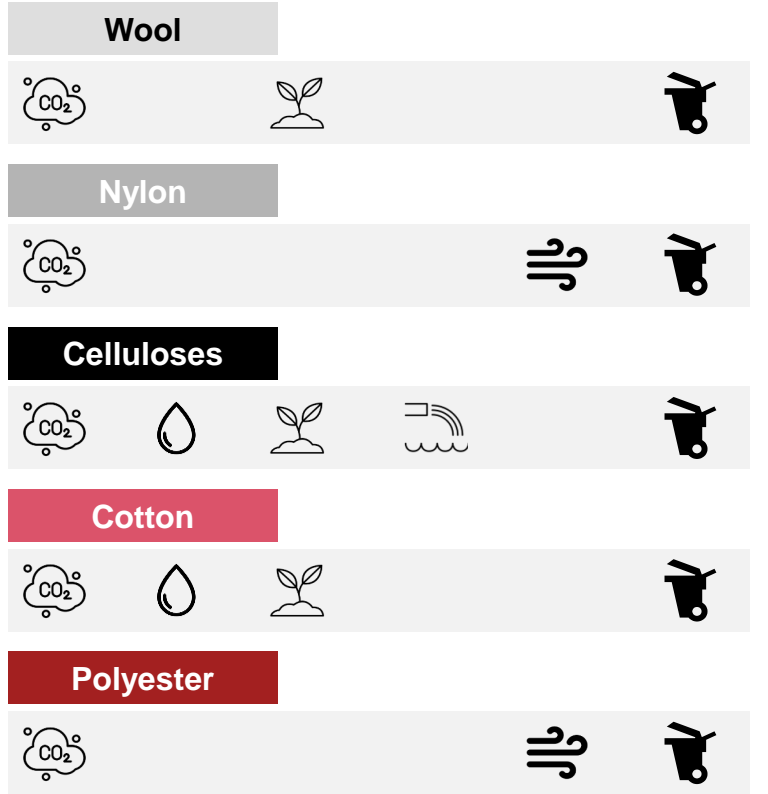


# World textile production has grown strongly historically with the boom of Polyester and Cotton, both with high CO2 emissions footprint

**World Fiber Production (1990-2020)**  
In million tonnes



**Main environmental impacts generated by fibers**



**Legend:** GHG emissions Water consumption Land use Water pollution Air pollution Waste generation

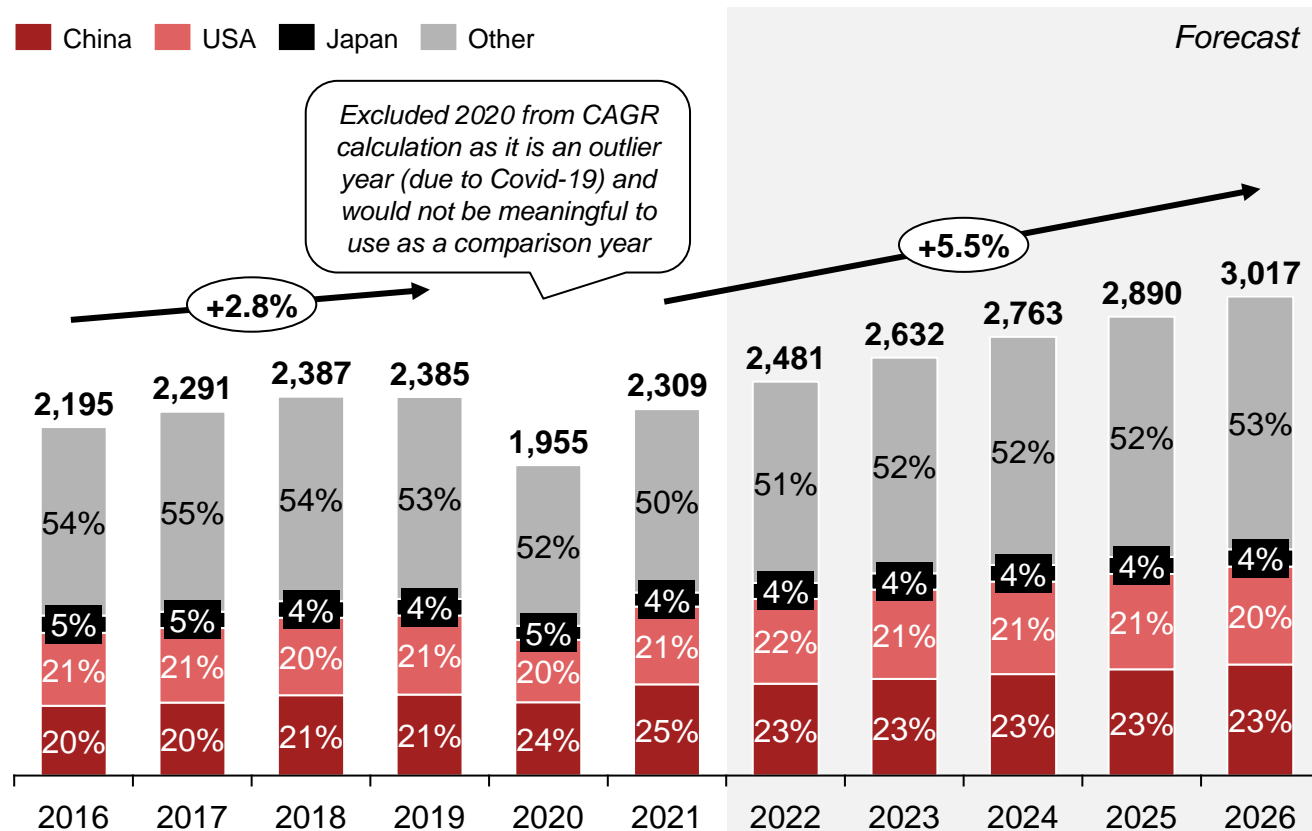




# The global Fashion market is forecasted to grow at 6% CAGR in the next 5 years, further driving the need to pay close attention to its impacts

## Global Apparel & Footwear Market (2016-2026)

In SG\$bn



## Market Drivers

### Rising middle class



The middle class population<sup>1</sup> grew by c.>300% to 1.7bn from 2000-2020, expanding the pool of affording consumers

### Enhanced perceived affordability



Increasing perceived availability of affordable apparel driven by growing adoption of flexible financing e.g. BNPL<sup>2</sup> is estimated to increase retail conversion by 20% to 30% and lifts average ticket size between 30% to 50%

### Growing eCommerce popularity



Online shopping drives improved accessibility and convenience, aligned with changing consumer preferences as the market is expected to grow by 7.2% CAGR over the next 5 years



# The majority of brands recognize the need for more sustainable practice, but too little progress has been made by the industry so far

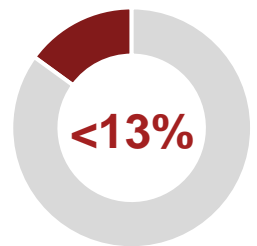
**While more than half of global fashion brands are advocating for sustainable practices**



**60% of key executives surveyed mentioned that implementing sustainability measures is one of the main strategy for their organizations**

**... but only a fraction of textile companies have committed to putting sustainable actions into practice**

*The large majority of fibres used in today's textiles are non sustainable*



**Sustainable fibres are less than 13% of the global production**

*Of which <7% fibre is recycled  
Of which <1% is organic*

**<1% of fashion textile is recycled to redo fashion textile**

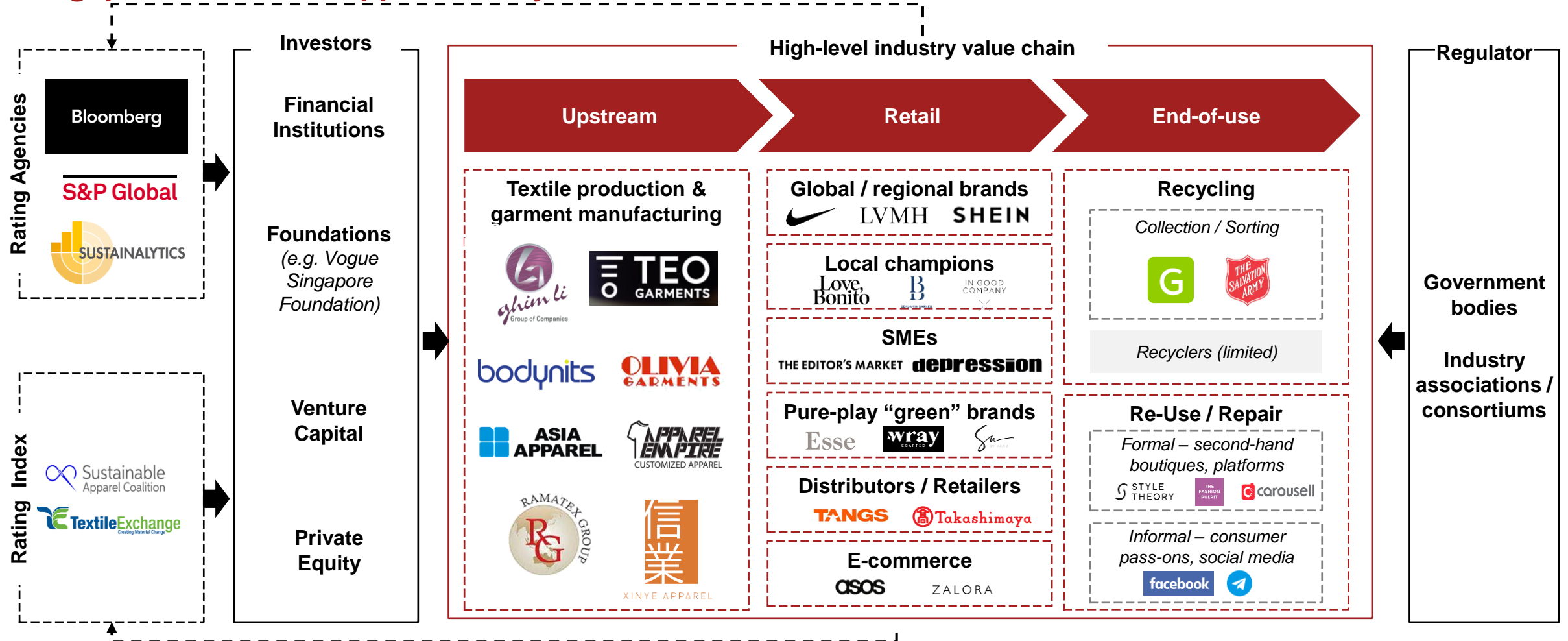


**Only 8% of brands in the France textile industry have placed sustainable development at their heart of their strategy in 2020**

# New initiatives to transform the industry should take into consideration the key players of the Singapore ecosystem

## Singapore textile and apparel ecosystem

Non-Exhaustive



# Our industry consultation also identified further specific challenges to be taken into account into this transformation journey

**Not exhaustive**

## Textile recycling appears difficult for now



**Lack of Large-scale Collection and Sorting:** Coordinated collection and sorting can be costly while space to store and sort remain in scarcity.



**Material Separation Difficulties:**

- High proportion of garments made from material blends such as cotton and polyester lead to difficulty in separating

**Lack of Traceability:**

- Absence of sufficient data on composition of textile material and chemical content of feedstock render high-value recycling opportunities unattainable



## Customer views on re-use and price sensitivity

«  
*“Price is the key purchase criteria for most customers, sustainability factor is an added bonus. Recycled materials cost a lot more, could be 50% higher, if not double. It is a huge stumbling block as most customers are not willing to pay.”*  
 - CEO, large garment manufacturer in Singapore  
 »

«  
*“There is a certain stigma surrounding used clothes, especially in Singapore. Customers tend to be quite sensitive around various factors – hygiene, poorer quality due to previous use or even being out of style as they are mostly from previous seasons. It’s just not for everyone.”*  
 - CEO, local second-hand fashion platform in Singapore  
 »

«  
*“Comfort remains the key purchase criteria for our customers, sustainability is secondary. We need to allow customers to feel the comfort of our material to charge a price premium and sustainability is a value-added choice.”*  
 - CEO, local champion and brand in Singapore  
 »

## Lack of ESG talent and understanding of ESG issues

«  
*“We have a green team but the vice-president of the green team is hired from external industry to help us kickstart sustainability initiatives while overseeing the team.”*  
 - CEO, large garment manufacturer in Singapore  
 »

«  
*“The industry has a shortage of ESG talent with knowledge to develop a sustainable supply chain; where elements of right design, brand building, marketing and partnerships are required.”*  
 - CEO, local second-hand fashion platform in Singapore  
 »

«  
*“Brands are faced with increasing need to go through ESG audits and more often than not, smaller brands do not have the necessary resources to cater towards these audits.”*  
 - CEO, local champion and brand in Singapore  
 »

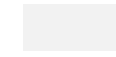
«  
*“Recycled polyester is not as durable compared to virgin polyester, and in most cases, breaking down the materials during recycling weakens the end-product.”*  
 - CEO, local champion and brand in Singapore  
 »

# Key focus of the study has been on GHG emissions and potential abatement levers for Singapore







## Negative environmental impacts generated by the textile industry



Focus of the study

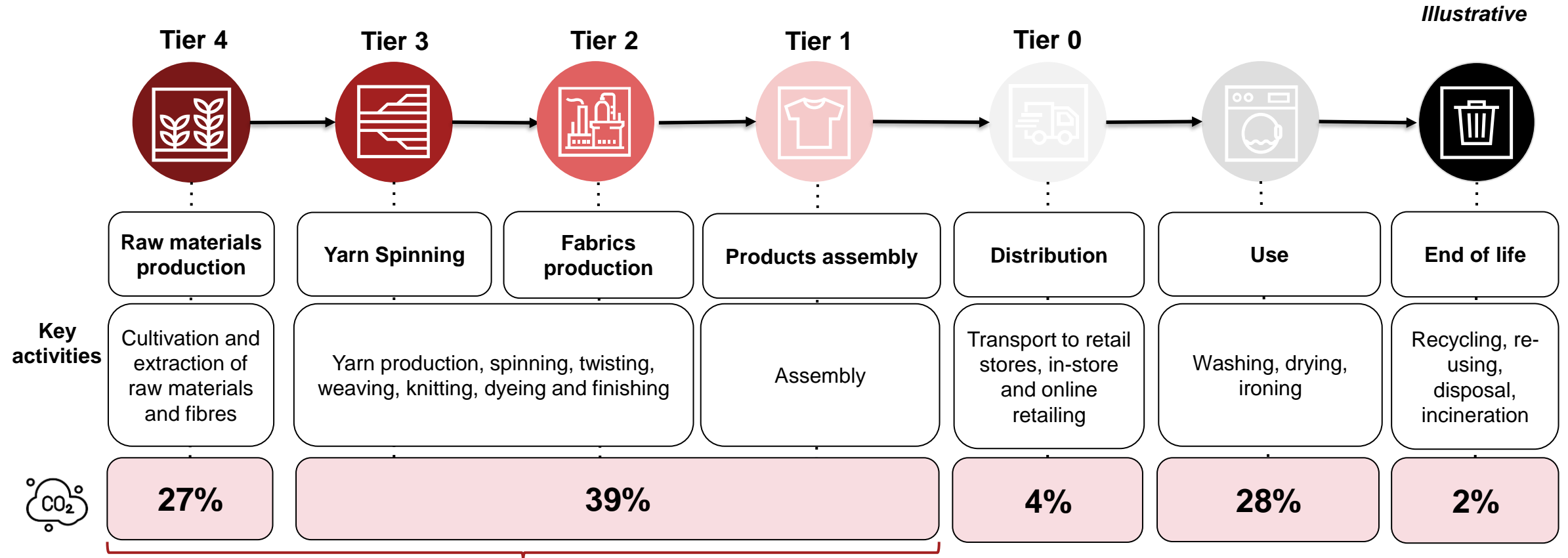


Other impacts

 <p><b>Greenhouse gas emissions</b></p>	<ul style="list-style-type: none"> <li>• <b>CO<sub>2</sub> equivalent emissions</b>, in particular linked to the use of fossil resources (energy used in transport, production, washing or the end-of-life of the textile). Other Greenhouse Gases such as CH<sub>4</sub> are directly converted into CO<sub>2</sub> emissions equivalent (CO<sub>2</sub> eq.)</li> </ul>
 <p><b>Water consumption</b></p>	<ul style="list-style-type: none"> <li>• <b>Watering and irrigation of fields</b> (especially for cotton or livestock)</li> <li>• <b>Production process</b></li> <li>• <b>Washing when using textiles</b></li> </ul>
 <p><b>Land use</b></p>	<ul style="list-style-type: none"> <li>• <b>Fields</b> necessary for the production of textiles (cotton in particular), to the detriment of natural areas</li> <li>• <b>Fields needed</b> for animal feed</li> </ul>
 <p><b>Air pollution</b></p>	<ul style="list-style-type: none"> <li>• Production of <b>harmful gases</b> during the production or end-of-life phases</li> <li>• <b>Product transport</b> over the entire product life cycle</li> </ul>
 <p><b>Water pollution</b></p>	<ul style="list-style-type: none"> <li>• <b>Use of insecticides and pesticides</b> that pollute groundwater (raw materials)</li> <li>• <b>Use of chemicals</b>, including for leather processing (production)</li> <li>• <b>Micro-plastics</b> dumped into the oceans (washing of synthetic textiles)</li> </ul>
 <p><b>Waste generation</b></p>	<ul style="list-style-type: none"> <li>• Production or end-of-life product <b>waste</b></li> <li>• <b>Packaging and transport</b> of textiles</li> <li>• <b>Landfill or incineration</b> of products</li> </ul>

# The carbon footprint associated to a new fashion product mostly comes from upstream production

## Life cycle GHG emissions of a new product purchased in Singapore along its value chain



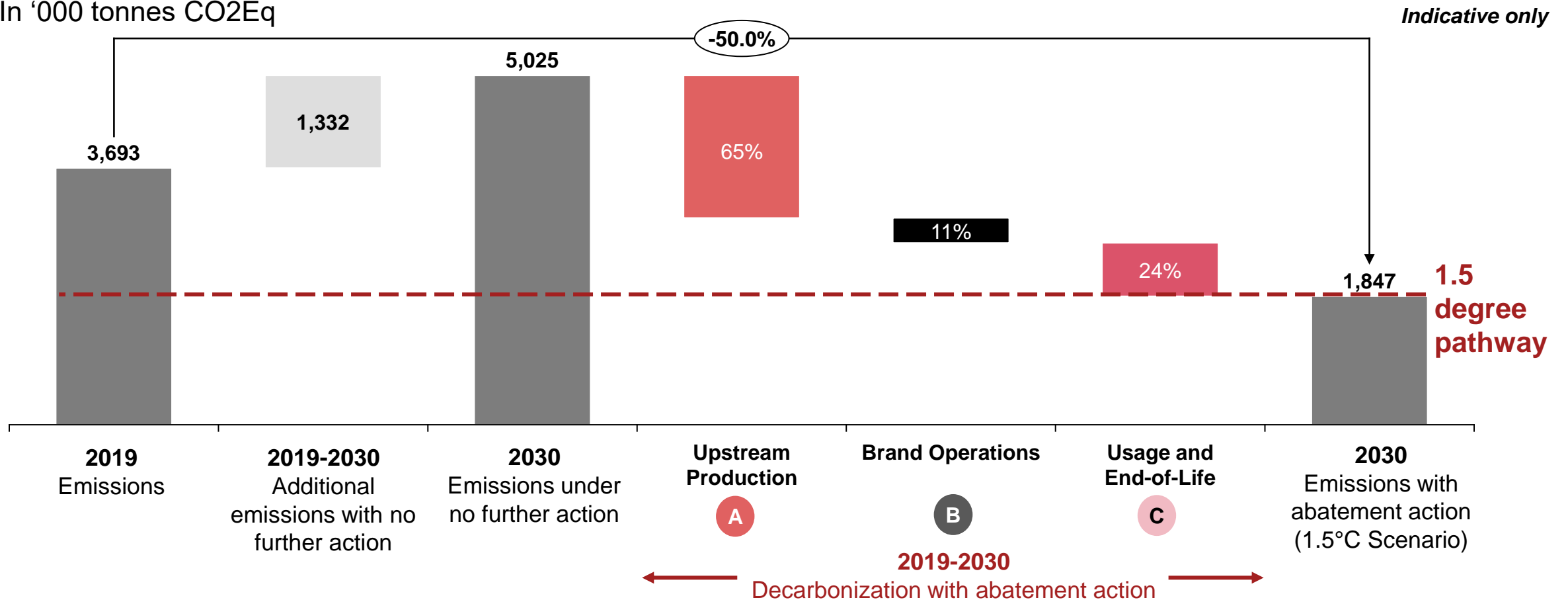
**Around two-thirds of the impact occurs upstream**

# Singapore emissions would need to decrease by 1,846 kilo-tonnes (50% from 2019 levels) to align with the global 1.5°C pathway scenario

## Singapore's fashion industry GHG emissions, by scenarios

In '000 tonnes CO2Eq

Legend: ■ Upstream production ■ Brand Operations ■ Usage & End-of-use



# Abatement initiatives have been identified through our best practices review along the value chain

**Indicative only**

Legend: H Higher M Medium L Lower

A Upstream production		
Key lever	Example initiative (s)	Abatement estimate <sup>1</sup>
		Accessibility
A1 De-carbonisation of energy mix	a) Generating on-grid RE power, purchase off-grid RE b) Switch to alternative fuel sources (e.g. gas)	~30% <span style="color: orange;">M</span> / <span style="color: red;">L</span>
A2 Coal phaseout: dry processing	a) Reduce wet pre-treatment, reduce wet dyeing and finishing	~19% <span style="color: red;">L</span>
A3 Increase sustainable material mix	a) Growth in use of preferred cotton b) Innovative fibers: increase rPET, regenerated fibres	~12% <span style="color: orange;">M</span> / <span style="color: red;">L</span>
A4 Maximising energy efficiency	a) Optimise factory settings, reduce energy consumption in processes	~3% <span style="color: green;">H</span>
A5 Minimised production & manufacturing wastage	a) Use of high-end designing software to draft patterns, repurpose fabric waste	~1% <span style="color: orange;">M</span>

B Brand operations		
Key lever	Example initiative (s)	Abatement estimate <sup>1</sup>
		Accessibility
B1 Reduced over-production	a) Shift to slow fashion, efficient management of inventory through advanced forecasting tools, custom production	~5% <span style="color: orange;">M</span>
B2 Decarbonised retail operations	a) Improve packaging, minimise returns, improve energy mix and energy efficiency of retail operations	~4% <span style="color: green;">H</span>
B3 Increase use of sustainable transport	a) Nearshoring – relocation of supply chain b) Shift in transport mix, electrification of commercial fleet	~2% <span style="color: orange;">M</span> / <span style="color: red;">L</span>

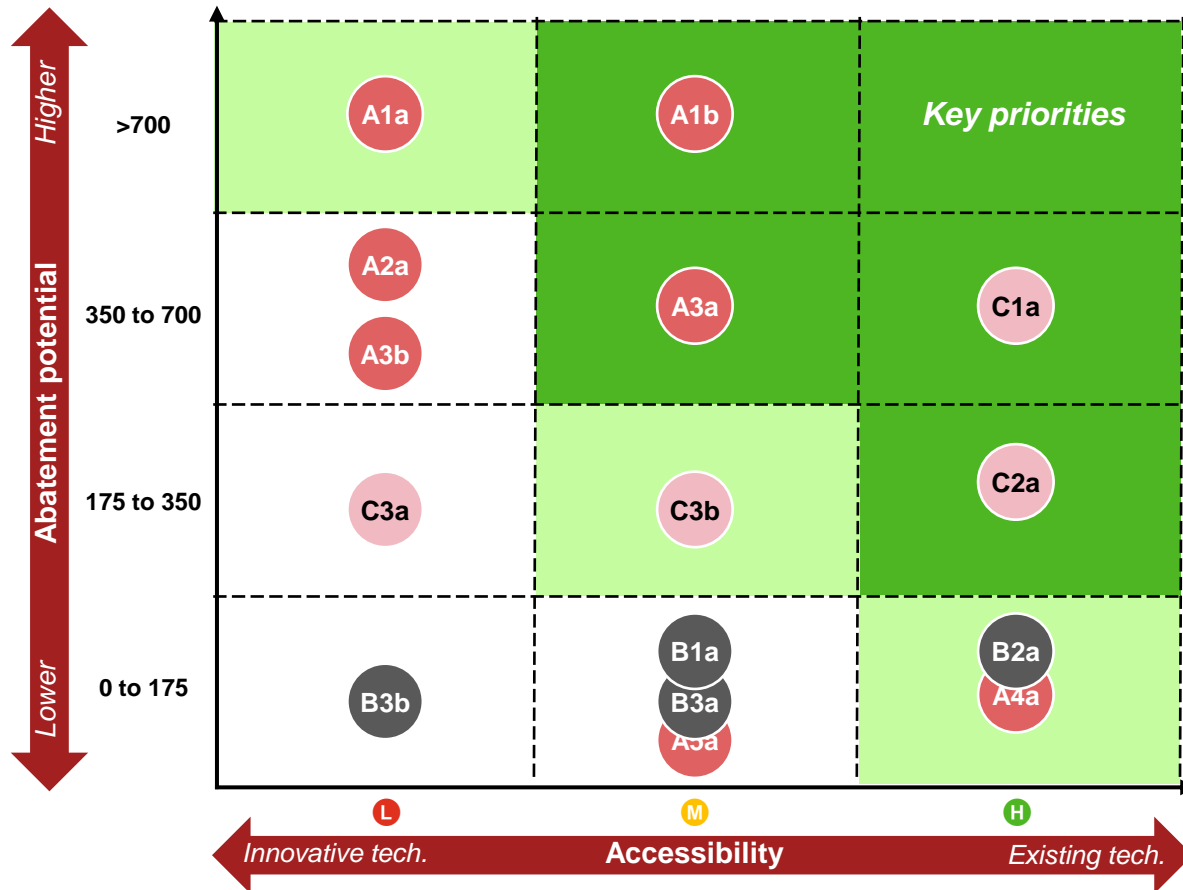
C Usage and end-of-use		
Key lever	Example initiative (s)	Abatement estimate <sup>1</sup>
		Accessibility
C1 Reduced washing & drying	a) Promote consumer education around benefits of greener fashion, change washing / drying habits	~11% <span style="color: green;">H</span>
C2 Increase circular business models	a) Increase use of rental models, increase use of re-commerce models developing local champions, promote repair & refurbishment	~7% <span style="color: green;">H</span>
C3 Increased recycling & collection	a) Deploy recycling technologies at scale b) Establish collection and sorting infrastructure	~6% <span style="color: orange;">M</span> / <span style="color: red;">L</span>



# Priority should be given to initiatives with highest abatement potential and accessibility (such as initiatives relying on existing technologies)

## Abatement Potential Estimates vs Accessibility

In CO2Eq KTonnes vs Higher/Medium/Lower



*Indicative only*

### Key initiatives compared

	Abatement potential <sup>1</sup>	Accessibility	Key priorities
A1a: Generating on-grid RE power, purchase off-grid-RE	●	L	✓
A1b: Switch to alternative fuel sources (e.g. gas)	●	M	✓
A2a: Reduce wet pre-treatment, reduce wet dyeing and finishing	●	L	
A3a: Growth in use of preferred cotton	○	M	✓
A3b: Innovative fibers, increase rPET, regenerated fibers	○	L	
A4a: Optimise factory settings, reduce energy consumption in processes	○	H	✓
A5a: Use of high-end designing software to draft patterns, repurpose fabric waste	○	M	
B1a: Shift to slow fashion, efficient management of inventory through advanced forecasting tools, custom production	○	M	
B2a: Improved packaging, minimise returns, improve energy mix and energy efficiency of retail operations	○	H	✓
B3a: Nearshoring – relocation of supply chain	○	L	
B3b: Shift in transport mix, electrification of commercial fleet	○	M	
C1a: Promote consumer education around benefits of greener fashion, change washing / drying habits	●	H	✓
C2a: Increase use of rental models, increase use of re-commerce models developing local champions, promote repair & refurbishment	○	H	✓
C3a: Deploy recycling technologies at scale	○	L	
C3b: Establish collection and sorting infrastructure	○	M	✓

**Legend:** ● >700 KT ○ 350 to 700 KT ○ 175 to 350 KT ○ 0 to 175 KT





# Key success factor #1

*Each company should tailor its sustainability strategy based on its brand's vision and competitive positioning, and monitor progress based on ESG reporting standards*

## ESG strategies and plans have to be crafted around the firm's goals and its stakeholders

- 
  - There is **no single ESG method** that works for all players within the fashion industry
  - Each industry player has **different challenges and goals** which means different ESG strategies
- 
  - ESG strategies **involve more than internal stakeholders** – it includes **external stakeholders** such as customers, regulators, financiers and the broader society
  - ESG strategies have to be **in synchronisation** with the society and its sustainable development goals
- 
  - Firms would then need to have a **complete transformation of company** to be **aligned with all functions and stakeholders of the company** through its **action plan**

## Companies would need to identify their vision and understand their competitive differentiation as there is no single solution

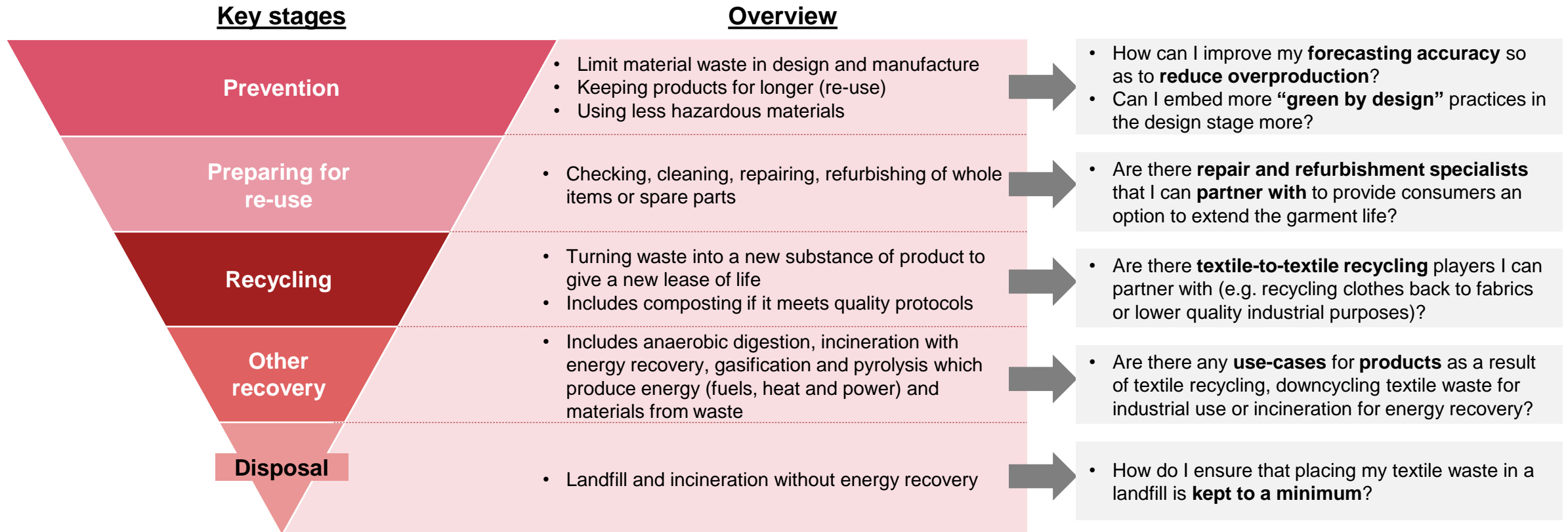
- 
  - Equip **ESG leadership and raise awareness**
  - Create and **equip ESG leadership team with ESG knowledge**
    - Develop understanding of ESG's objectives and activities
- 
  - Understanding Vision & Competitive Differentiation**
  - Identify their **vision and competitive differentiation**, based on the operational business model
- 
  - Diagnosis**
  - Map out where they sit within the value chain**, while **identifying the strategic priorities** Understand and estimate **possible environmental and social impacts**
- 
  - Identify & Prioritise Action Levers**
  - Identify and prioritise **material topics (key action levers)** to work on, based on strategic priorities and constraints
    - Identify and engage **key stakeholders**
- 
  - Implement Action Plan and monitor progress**
  - Develop action plan** to cater to all stakeholders' needs and **implement action plan**
    - Review action plan with **adoption of reporting standards** and **conduct audits**

# Key success factor #2

Companies should also refer to the “Waste Hierarchy” to rethink waste processes and prioritise actions that keeps textile waste out of landfills

The waste hierarchy ranks waste management options according to environmental impact, with top priority given to waste prevention and the least to disposal

Potential considerations to improve waste management process



# Key success factor #3

*Active collaboration between the industry and the regulator will be a critical success factor to decarbonise the industry – WRAP example*

## Selected case study – UK WRAP

**Overview**

<b>Overview</b>	<ul style="list-style-type: none"> <li>Waste And Resources Action Programme</li> <li>Established in 2000, works with governments &amp; businesses to achieve circularity &amp; develop sustainable practices</li> <li>Focus areas – F&amp;B, Plastic packaging, Clothing &amp; textiles, collections &amp; recycling</li> </ul>
<b>Textile initiatives</b>	<ul style="list-style-type: none"> <li><b>Report publications &amp; studies</b> – Launches industry-wide studies (e.g. environmental impact of clothing in UK)</li> <li><b>Retailer education</b> – Guides on improving re-using and re-cycling</li> <li><b>Consumer education</b> – “Love your Clothes” campaign</li> <li><b>Industry activation</b> – Formation of the Textile Action Network in UK</li> </ul>

**Selected landmark sustainability initiatives**

### 1 Sustainable Clothing Action Plan (2012 –2020)

**Overview**

- NGO-led collaboration** to reduce environmental footprint of clothing in UK
- Signatories** (>90 organisations, ~50% of UK clothing sales) **pledged** to achieve water, waste and carbon **reduction targets** through a range of initiatives (e.g. increase recycling)

Refer to overleaf for more details

**Outcomes** (against 2012 baseline)

	<b>Carbon footprint</b>	Target: 15%	<b>Achieved: 21.6%</b>
	<b>Water footprint</b>	Target: 15%	<b>Achieved: 18.2%</b>
	<b>Waste footprint</b>	Target: 3.5%	<b>Achieved: 2.1%</b>

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### 2 Textiles 2030 (UK Sustainable Textiles Action Plan)

**Overview**

- Built on the SCAP, Textiles 2030 is a **10-year agreement** that aims to reduce **carbon footprint** in the UK textile market by **50%**
- Sets out a **clear roadmap** for signatories to implement to as to achieve targets set
- Funded by signatories and the government

**Targets**

- 50% reduction** in overall **carbon footprint** of products / services
- 30% reduction** in **water footprint** of products / services
- Design and implement more **circular practices** and models

**TaFF has an opportunity to drive transformative industry-wide initiatives favouring circularity in SG, similar to UK’s WRAP**

# Key success factor #4

*The fashion industry is fragmented, with a long tail of SMEs. Embarking SMEs into the ESG transformation is another key success factor*

## Key bottlenecks identified for SMEs

**Lack of ESG education and awareness**  
(both defensive and offensive with changing consumer preferences)

**Lack of understanding of ESG reporting frameworks and KPIs to track**

**Lack of resources for data collection and tools for ESG reporting**

**Lack of specialised resources and talent on ESG topic**

*“A lot of brands in Singapore have insufficient knowledge on ESG – they are unsure of what it takes to be labelled as a sustainable brand and what are the steps needed to get there.”*  
- CEO, Local champion, Singapore

**Lack of access to sustainable financing and grants**

**Lack of support and access to Tier 1 ESG certifications for garment manufacturers**

**Lack of understanding of sustainable supply chain best practices**

**Lack of volumes to meet MOQ requirements for sustainable material procurement**

*“Smaller brands lack the economies of scale to procure sustainable materials at a commercially viable price, pricing for their volumes is higher.”*  
- CEO, Large garment manufacturer, Singapore

# Thank you

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